

BOOK REVIEW

THE CATERPILLAR AND THE BUTTERFLY. Robert E. Snodgrass. Smithsonian Miscellaneous Series, Volume 143, Number 9. 51 pp. (Pub. No. 4472). Smithsonian Institution, Washington, D. C. November, 1961.

This delightful booklet is in one respect a companion piece to Dr. Snodgrass' "The Anatomical Life of the Mosquito" in the fact that it presents a remarkably thorough review of the literature on anatomy and development of lepidopterous insects. This is done, as might be expected, in a very pleasing and readable style, and is entirely comprehensible to anyone at all interested in the Lepidoptera. It is also a serious treatise on morphology, and provides both a unifying theory of lepidopterist evolution and a wealth of factual material for the specialist.

Dr. Snodgrass' central theory is the concept that the "adult (lepidopterous) insect is responsible for the structure of the larva";—in an evolutionary sense. This responsibility, he shows, had its origin in the evolutionary trend in mouthpart structure of the adult ancestors of present-day moths and butterflies, which resulted in the evolution of the familiar coiled proboscis of the Lepidoptera. Thus the adult insect became limited in its feeding to the nectar of blossoms, a fact demonstrated by the absence in these insects of any enzymes other than invertase. "Though nectar was formerly a favorite drink of the gods, it must be a very inadequate diet even for a moth or a butterfly. The female at least needs proteins for the production of yolk-filled eggs. Hence it should be the duty of the caterpillar to store up reserves in its body to supplement its diet in its own adult stage." Snodgrass next proceeds to show how the immature insect has been structurally modified to equip it to meet this obligation, and the result is the typical modern caterpillar with which we are all familiar.

A fascinating study of caterpillar specialities follows, including an easily-comprehended description of that amazingly complex activity, the locomotion of caterpillars. The metamorphosis of the Lepidoptera is treated in the vein of Dr. Snodgrass' earlier writings on this subject. The view that the larva represents a free-living stage of the embryo is logically examined and dismissed as something akin to science fiction. There is also a brief review of the more recent literature on hormones and metamorphosis.—J. B. SCHMITT